

ABSTRACT OF THE DISCLOSURE

A fuel cell is provided that is suited for mobile and portable applications. Using an innovative anode with a layer to control the rate of diffusion of fuel to the fuel cell anode, fuel crossover through the liquid or solid electrolyte of the fuel cell is prevented. Electrolyte integrity is preserved, giving a more robust and reliable fuel cell. Further, the innovative anode allows for the use of highly active fuel compositions which otherwise may be chemically oxidized, releasing heat, or give unstable electrical currents. The use of active fuel compositions with the anode, as well as a fuel composition and liquid electrolyte in which gaseous side-products dissolve allows for the design of a robust, powerful portable fuel cell which can be used at room temperature with little peripheral equipment.